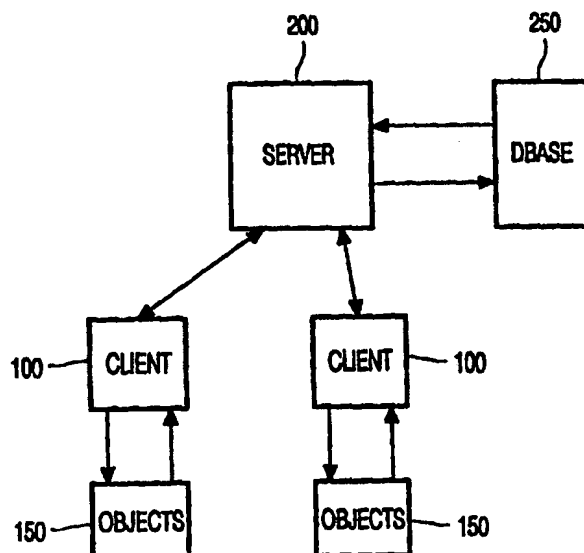




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/IB99/00036</p> <p>(22) International Filing Date: 14 January 1999 (14.01.99)</p> <p>(30) Priority Data: 9800901.2 17 January 1998 (17.01.98) GB</p> <p>(71) Applicant: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).</p> <p>(71) Applicant (for SE only): PHILIPS AB [SE/SE]; Kottbygatan 7, Kista, S-164 85 Stockholm (SE).</p> <p>(72) Inventors: WALKER, David, P.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). SIMONS, Paul, R.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). WALLS, Timothy, J.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).</p> <p>(74) Agent: WHITE, Andrew, G.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).</p>		<p>(81) Designated States: CN, IN, JP, KR, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p><b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i></p>

(54) Title: GRAPHIC IMAGE MESSAGE GENERATION



## (57) Abstract

A method and apparatus for the generation of graphic paging messages for passing between remote data communications devices (100). A device constructs a graphic message using one or more locally stored (150) image component objects, and then codes the message as an ordered list of such component objects and their relative positions within a fixed coordinate image field. A server (200) handles the passing of messages from one device (100) to another, as well as storing such messages when a device is unavailable. The server (200) also maintains or provides access to a library (250) of object components accessible by each user device and from which further component objects may be selected to augment those from which a user composes graphic images for transmission.

## DESCRIPTION

## GRAPHIC IMAGE MESSAGE GENERATION

5           The present invention relates to the formation and transmission of graphic images and particularly, but not exclusively, to the sending of graphic objects as all or part of a message between users of hand-held or mobile communications devices.

10           The majority of the current generation of hand-held mobile devices are driven by text-based user interfaces and deliver text-only messages in paging and similar operations. Through these interfaces, the user is enabled to browse the handsets range of functionality and select and perform the required tasks. Such mobile devices can also exchange information using protocols such as the  
15 Short Message Service (SMS) part of the Global System for Mobile communications (GSM) digital standard. These text based displays have a limited capability and lack the flexibility of display and appeal of graphical information. Increasingly there is a desire to incorporate graphical information to improve both the user interface and the exchange of information.

20           An example of a mobile messaging system seeking to improve the ready understandability of messages through the use of displayed graphic icons to represent or support a message is described in International patent application WO97/19429 (Motorola/Deluca et al). In the mobile telephone receiver described, a graphics database holds image data for a number of  
25 predetermined images, each identified by a respective (and standardised) code. On receipt of a paging message from another user, the handset processor scans the message firstly to identify whether it contains the code or codes for one or two of the images stored in the graphics database and, on finding these, it generates these images on a display screen of the handset. Secondly, it  
30 scans the message for any character string data which, if found, will be converted to a text message and displayed on screen below the image or

are excessive.

In order to expand the devices component store, the said server may maintain a database of image component objects, with the message generating  
5 apparatus being enabled to access said database, download via communications link data defining a selected one or more image component objects, and store the same. The selection and downloading may be wholly or partly under the direction of the user of the sender device, with the server perhaps presenting menus of available objects. To avoid the need for further  
10 telecommunications protocol specification to support the service, communications between said apparatuses and via the server may suitably conform to GSM protocols with the sending of coded graphic data utilising the above-mentioned SMS function of GSM: it is a particular feature that the graphic message data should be extremely compact, as will be discussed hereinafter.

15 Also in accordance with the present invention there is provided a portable communications apparatus for use as a message generating apparatus in the above-recited method, the apparatus comprising: a first memory comprising a store of component objects; a display device controllably operable to display one or more component objects recalled from the first memory; user operable  
20 control means for selecting and manipulating displayed component objects; encoding means for generating a coded specification of said selected and manipulated component objects; and transmitter means for formatting and sending, via a server, a paging message including said coded specification.

The encoding means may be arranged to generate an ordered rendering  
25 list identifying the order in which the selected component objects are to be rendered on regeneration of the image, and to sequentially code each object of the list as a first data word identifying the object type and one or more further words specifying coordinates for said object. The apparatus may further comprise a receiver coupled with the said first memory and configured to  
30 receive coded image data from the server, and further storage means coupled with the display and containing said object identifier codes, the display being

Figure 1 generally illustrates a messaging system which may suitably embody the present invention, comprising a number of client personal communications devices 100 exchanging messages using the SMS part of the GSM digital standard via a server 200. If a client is unreachable, then a message will be stored at the server 200 and sent later as the target client becomes available. The present graphic messaging system sits on top of the existing SMS infrastructure; SMS allows short textual messages to be sent between telecommunications devices, with messages being entered by typing on the devices keypad, and the applicants have recognised that this may be extended to support the sending of suitably formatted graphic image data.

In general operation, a client device 100 provides the user with means in the form of a simple graphics editor to assemble graphic images from one or more component objects (which objects may include text strings), as will be described, with the device maintaining an internal store 150 of such component objects. Preferably, in a basic mobile telephone application, all interactions or object manipulations specified by the user are performed by the standard telephone keys: for example, the user could use the 4 and 6 numeric keys to move a selected object left or right, and the 8 and 2 keys to move up or down.

In order to enhance the number of component objects available to a user composing an image, the server 200 may maintain or provide direct access to a library 250 of additional objects. Using either SMS or a GSM data channel, the user can browse a hierarchical menu of images and select one for downloading to the users device. Alternatively, or additionally, by use of the same numeric keys for object manipulation, the user may be enabled to "draw" freehand. In a further extension to this, where the user device features a touch-screen user input, direct drawing of component objects by use of a stylus and the screen may be accommodated.

In order to permit the direct transmission of graphic images to the client devices, a component object specification is used which describes an image by the objects comprising it (lines, polygons, points/circles etc.): a particularly

indicate the type of object (point, text, filled or unfilled polygon), following which is one bit, s, indicating whether or not object may be selected at the device of a receiving user (0=no; 1=yes), then three bits, ppp, to specify a parameter value of 0-7. Commands may be followed by coordinates in terms of the image field  
5 and formatted as shown in Figure 5, with the first seven bits giving a value 0-127 for the X coordinate, and the other seven bits giving a value 0-127 for the Y coordinate.

A block schematic diagram of a mobile/hand-held communications device configured both to receive and generate component object encoded  
10 messages is shown in Figure 6. The functioning of many of the component parts will be well understood by the skilled reader and, other than in terms of their bearing on the operation of the present invention, they will not be described in detail.

From an aerial 20 or other signal input, a received signal is passed via  
15 transceiver 22 and decoder 24 stages to a central processing unit 26, which unit also (in this embodiment) handles the function of display driver formatting graphical and text data into display commands for output to display screen 28. An apparatus memory 30 is coupled with the processor and holds basic operating data and programs for the device. User input to the processor 26 is  
20 via controls 32: these may be in the form of a simple keypad and/or they may be combined with the display 28 through a touch-screen arrangement, as indicated by dashed line 34. Other conventional functions of the device (for example audio handling) are illustrated generally at 36.

Coupled with the processor 26 is a further store 38 containing a collection  
25 of component objects as well as the command word codes (referred to above) to enable the processor/display driver 26 to interpret received command words and recreate the encoded image: this memory may also hold a table of ASCII codes for text strings. Also coupled with the processor 26 is a scaling stage 40 which may comprise a simple hardware arrangement of multipliers to convert  
30 the image field coordinates in a received data stream to fit the available area and aspect ratio of the display device 28. Finally, output signals from the

formulated to such features and/or combinations of features during the prosecution of the present application or of any further application derived therefrom.

component objects;

encoding means for generating a coded specification of said selected and manipulated component objects; and

transmitter means for formatting and sending, via a server, a paging  
5 message including said coded specification.

5. Apparatus as claimed in Claim 4, wherein said encoding means is arranged to generate an ordered rendering list identifying the order in which the selected component objects are to be rendered on regeneration of the image,  
10 and to sequentially code each object of the list as a first data word identifying the object type and one or more further words specifying coordinates for said object.

6. Apparatus as claimed in Claim 5, further comprising a receiver  
15 coupled with said first memory and configured to receive coded image data from the server, and further storage means coupled with said display and containing said object identifier codes, said display being configured to reconstruct the image from the object data and output the same.

20 7. Apparatus as claimed in Claim 4, wherein said control means comprises a touch screen overlaying said display.

8. Apparatus as claimed in Claim 7, wherein said control means is configured to monitor and store component objects specified by user input in the  
25 form of entry via the touch screen.

9. Apparatus as claimed in Claim 4, further comprising a plurality of user operable controls wherein said input means are provided as selectable secondary functions of said user operable controls.

Object	Type
11	Black unfilled polygon, with 1 edge.
12	Black unfilled polygon, 4 edges.
13	Black filled polygon, 7 edges.
14	White filled polygon, 4 edges.
15	Black text string.
16	Black point, radius 1
17	Black point, radius 4.

FIG. 3

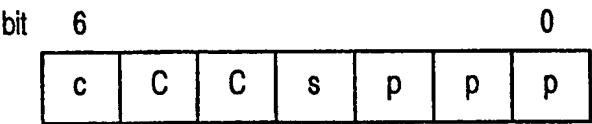


FIG. 4

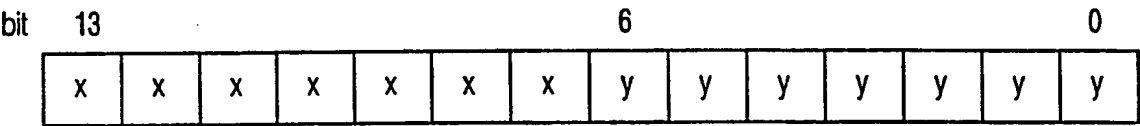


FIG. 5

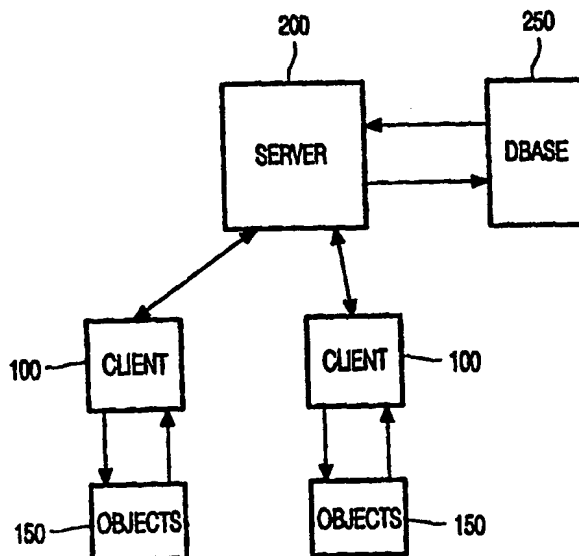




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(22) International Filing Date: 14 January 1999 (14.01.99)		Published With international search report.	
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(71) Applicant: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).			
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(72) Inventors: WALKER, David, P.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). SIMONS, Paul, R.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). WALLS, Timothy, J.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).			
(74) Agent: WHITE, Andrew, G.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).			

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 99/00036

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/22, G08B 5/22

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04Q, G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIL, EPOC, JAPIO

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9719429 A1 (MOTOROLA INC.), 29 May 1997 (29.05.97), page 1, line 12 - line 31; page 10, line 5 - page 11, line 29, claims 1-8  --	1-9
X	CA 2193764 A1 (NEC CORPORATION), 26 June 1997 (26.06.97), page 2, line 10 - page 5, line 21, claims 1-8, abstract  --	1-9
A	GB 2308523 A (NORTHERN TELECOM LIMITED), 25 June 1997 (25.06.97), claims 1-6, abstract  --	3

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search

13 July 1999

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Information on patent family members

01/06/99

International application No.

PCT/IB 99/00036

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